

Gamification of learning within a problem solving context

individualised learning

adaptive testing

confidence and proficiency self-ratings

FYE 2015 Project

**Creating a path to success by providing avenues for
individualised learning and catering for individual learning needs**

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Pathways, avenues & individualised learning

68037 Physical Modelling

FYE13

Focused Learning Support in Physics. (Just-in-time, individualised, language focused student learning support)

FYE14

Feeding back to feedforward: Using targeted language interventions to support student learning in first year physics

FYE15

Creating a path to success by providing avenues for individualised learning and catering for individual learning needs

Means & Tools

Progress analytics (beta)

Individualised mails

NEB, @risk

Progress analytics (alpha)

Multi-parameter mails

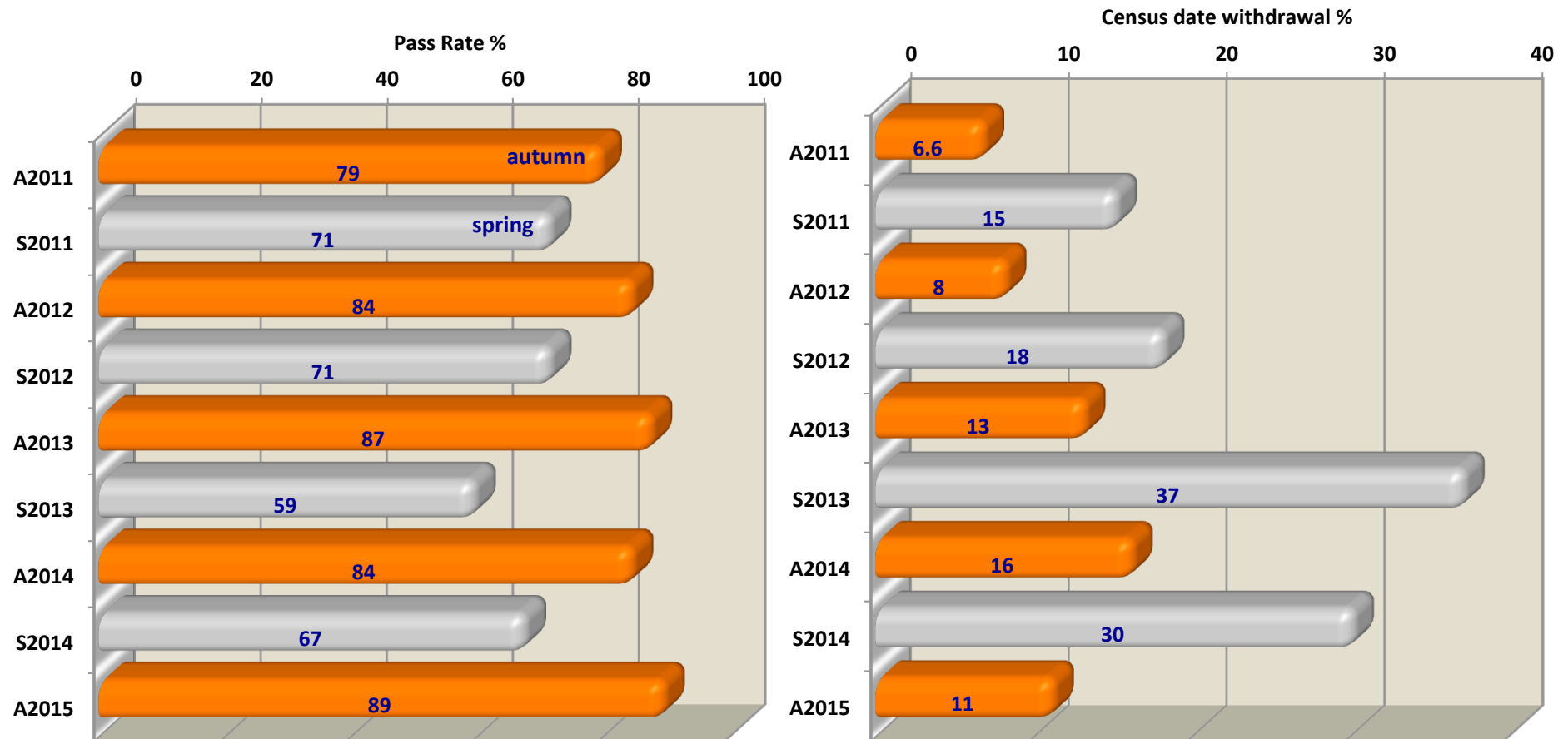
Progress analytics 0.1

Multi-parameter feedback

Social Media (UCROO)

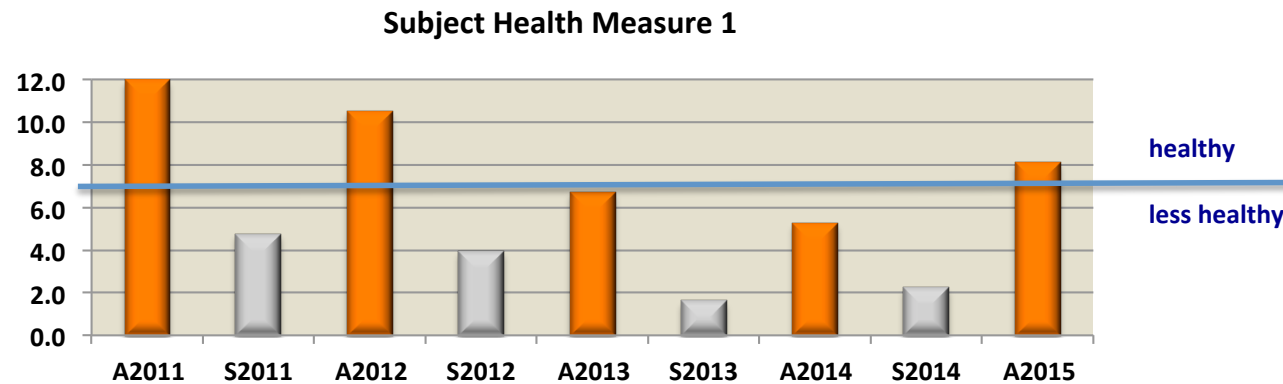
Adaptive Learning, Transition





68037 Physical Modelling

1-sem core for FEIT students, taught in Science



Subject Health Measure 1 (pass rate : withdrawal rate)

Students' expectation to succeed @ enrollment	enrollment #
Students' concerns @ census date	withdrawal #
Students' expectations after census date	enrollment #
Students' validation of expectations @ end of semester	pass rate

Aim

- **smoother transition**
- **individual pathways to learning**
- **... followed up by personalised feedback informed by learning analytics**

Approach (adaptive learning)

1 large summative assessment:
(proficiency, not just performance)

- **incremental steps guided by students' own pace**
- **more capable students -> larger steps**
- **permission to excel in areas of interest and be rewarded for it**
- **gamification, competitive**

final exam optional

Transition - student perspective

(compared to pre-uni and other traditional uni assessments ...)

Past experience:

- **time-limited** (multiple deadlines throughout semester)
- **1-time performance** (class test, repeat mastery test, final exam)
- **feedback assessment triggered**

Transition supporting experience:

- **self-paced “deadlines”, very small summative assessment steps (24/7)**
- **opportunity to compensate for deficiency in other areas**
- **gamification of progress**
(challenge, loose, make up for mistakes, succeed, move level up)
- **immediate feedback, adaptive progress, feedforward feedback**

Transition - academic perspective


(compared to pre-uni and other traditional uni assessments ...)

Transition supporting experience:


- **self-paced learning**
- **self-testing**
- **approaching new material and re-approaching past material**
- **learning analytics informed personalised feedback to feedforward**
- **very low intermediate stakes , high end stake**
- **highly competitive and rewarding accordingly**

FYE 2015

Adaptive Learning – Student's View

**ORION**

Fundamentals of Physics 10e ORION

View as Instructor  SCHULTE, JU... ▾

Practice - 11.2: Start with "credit" of 20 problems/lives body. - Practice

TIME SPENT 00 : 02 : 00 disciplinary skill

Q 11.1: Two identical disks, with rotational inertia $I (= 1/2 MR^2)$, roll without slipping across a horizontal floor and then up inclines. Disk A rolls up its incline without sliding. On the other hand, disk B rolls up a frictionless incline. Otherwise the inclines are identical. Disk A reaches a height 12 cm above the floor before rolling down again. What height above the floor does disk B reach?

 cm↑
skills required to solve problem
no multiple guess choice↑
quantitative problem↑
confidence level
time to solve
proficiency, not performancegamification
multiple honed trades lead to success

Performance in Last 10 Qs

own "shooting" track record



Question

About this Question

Question Difficulty

Difficulty 

39.8%

Students got it correct

strength of "opponent"

 ☐ Mark for ReviewConfidence 

SUBMIT

perceived own "strength"

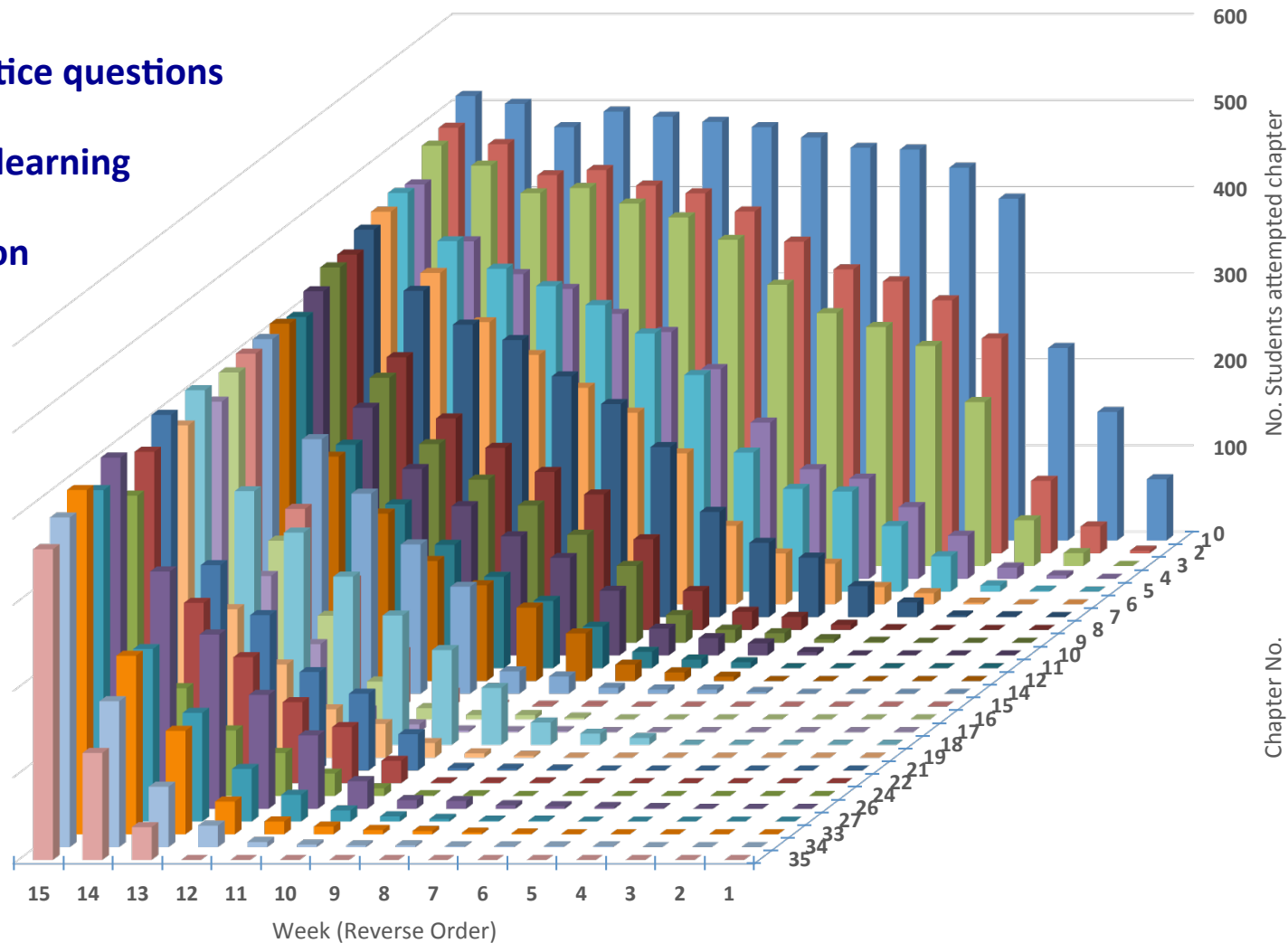
Next round/level of problems depends on how this round has been completed

Weekly Cumulative Total Students Attempting Each Chapter (No Minimum)

more practice questions

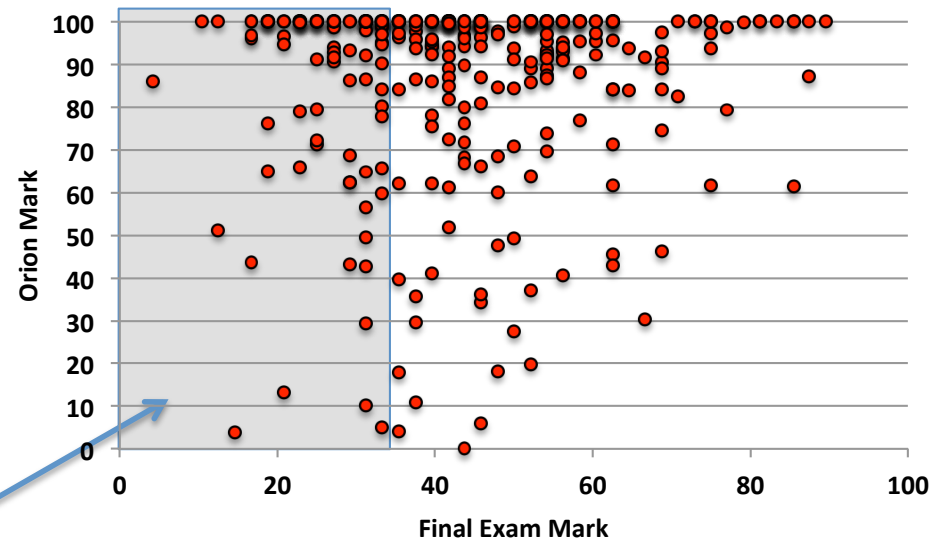
control of learning

gamification



“Orion Mark”

Adaptive learning proficiency: 80% proficiency = 100% Orion Mark



Likely fail without adaptive learning

Final Exam

Optional

72% participation

Opt out

28% opt out

Opt out pass rate

77%